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# PT 563.01: Cardiopulmonary Physical Therapy

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**PT 563**  
**Cardiopulmonary Physical Therapy**  
**Fall 2014 – Block 1**

I. **Instructors:** James J Laskin, PT, PhD

- Room 105, Office hours – By appointment
- [james.laskin@umontana.edu](mailto:james.laskin@umontana.edu)
- Phone: 243 - 4757

II. **Credits:** 3

III. **Meeting Time:** Tuesday & Thursday 8:10-12:00  
Room 114/018

IV. **Resources accessed:**

Moore KL. Clinically Oriented Anatomy  
O'Sullivan, S. Physical Rehabilitation  
American Physical Therapy Association Guide to PT Practice  
Ciccone, C.D. Pharmacology in Rehabilitation  
Perison FM, Fairchild SL. Principles and Techniques of Patient Care  
Goodman and Snyder. Differential Diagnosis for Physical Therapists

*Hall and Brody. Therapeutic Exercise*  
*Kisner and Colby. Therapeutic Exercise*

**Readings:** Selected **required** readings will be available in the required texts. Required articles and/or other selected readings will be placed on Moodle online; once you log on follow the PT 563 links. Required readings must be completed prior to class.

VI. **Course Description:** This course addresses the physical therapy management of persons with dysfunction of the cardiac and/or pulmonary systems, and related pathologies in terms of pathology, assessment, differential diagnosis, treatment, and pharmacology. Case studies or client examples are used to apply the processes of examination, evaluation, diagnosis, prognosis, intervention, and outcomes document. Management by other health professional team members will be discussed in the context of comprehensive care. This course is designed to assist in the synthesis of knowledge and practical experiences in designing and implementing rehabilitation programs and exercise interventions as a physical therapist and represents the progression from basic physiology to exercise physiology, through pathology and therapeutic exercise.

## VII. Evaluation Methods:

Pulmonary Section Exam	30%
Assignments	
NDWC	10%
Pulm Lab 1	7.5%
Pulm Lab 2	7.5%
CV Lab 1	7.5%
CV Lab 2	7.5%
Cardiac Section Exam	30%

VIII. **Grading Scale:** These course components must be successfully completed with a C or better (> 73). Opportunities to retake tests or the final exam due a failing grade will not be available. Test and exam results will be available on Moodle.

Percentage	Grade	Grade Point
90-100	A	4.0
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0

IX. **Teaching Methods and Learning Experiences:** Lecture/discussion supported with electronic media, assigned readings, laboratory experiences.

Major educational models introduced include:

- Health care disablement model
- Motivational Interviewing

Assignments: There are 5 assignments to be completed in this course. Four of them are directly related to the in class lab experience and are designed to help the student better synthesize the skills being introduced. The NDWC assignment will be used to integrate the skills and didactic content on volunteer clients from the NDWC. Specifics of the assignment and expectations will be provided in class.

Exams: There will be 2 section exams: Pulmonary Section and Cardiovascular Section. These will be 2 hour exams that will cover the material covered in that section and will not be cumulative. Questions will included: T/F, MC, short answer and case study.

X. **Professional Behaviors:** Professional behaviors are expected in the course. These include (but are not limited to): responsibility for one's own learning, completion of group and individual assignments in a timely manner, on time attendance unless excused, coming to class prepared, treating fellow students, staff, and faculty with respect, receiving and giving constructive criticism if appropriate. Please refer to the "Generic Abilities" section in your student handbook.

Academic Honesty: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.

All student need to be familiar with the Student Conduct Code. The Code is available for review online at <http://www.umt.edu/SA/VP/SA/index.cfm/page/1321>.

Plagiarism is to be avoided. For information on plagiarism please visit these links:

[http://www.calstatela.edu/centers/write\\_cn/plagiarism.htm](http://www.calstatela.edu/centers/write_cn/plagiarism.htm)

<http://www.lib.umt.edu/services/plagiarism/index.htm>

Students with Identified needs:

The UM strives to make special accommodations for students with identified special needs. Students with disabilities must register with UM Disability Services for Students. Their office is the University of Montana's student affairs office, which assures program access to the University by students with disabilities. Their website is as follows: <http://life.umt.edu/dss>.

#### **XI. Useful Internet Links:**

<http://www.cardiopt.org>

Cardiopulmonary section, APTA

<http://www.aacvpr.com/>

American Association of Cardiovascular & Pulmonary Rehabilitation

PT 563 Cardiopulmonary PT and Pharmacology  
Course Objectives

Code for Objectives:

- 1 - Knowledge and comprehension
- 2 - Application
- 3 - Psychomotor
- 4 - Analysis, synthesis, and evaluation
- 5 - Affective

A. Physical therapy in cardiopulmonary disease (CC-5.1, 5.10, 5.11, 5.40, 5.45)

- (1) 1.0 Describe the scope of physical therapist practice and the relationship to other allied health providers in the context of cardiopulmonary systems management (5.10, 5.11; EXO 8, 9)
- (2) 1.1 Differentiate between entry-level and advanced competencies practiced and use of other personnel in client care (5.40; EXO 6)
- (3) 4.0 Summarize reimbursement issues and use of selected outcome measures with respect to patients with cardiovascular and/or pulmonary disease (5.1, 5.45; EXO 8,12)

B. Health care & disablement models in cardiopulmonary disease (CC-5.22, 5.32, 5.33)

- (4) 1.0 Describe ways a diagnosis may guide subsequent management in patients with cardiovascular and/or pulmonary disease (5.32; EXO 2)
- (5) 1.1 Describe how prognosis may be determined for patients with cardiovascular and/or pulmonary disease (5.33, EXO 2)
- (6) 2.0 Apply the disablement model as described in the Guide to Physical Therapist Practice in the management of people with cardiovascular and/or pulmonary disease (5.22)

C. Applied anatomy & pathophysiology of cardiopulmonary disease (CC-3, objectives 7-10, EXO 1)

- (7) 1.0 Describe the process of atherosclerosis and contemporary theories of plaque rupture
- (8) 1.1 Describe the elements of obstructive and resistive diseases and conditions of the pulmonary system
- (9) 1.2 Describe the process of peripheral arterial and vascular disease and the associated impairments
- (10) 2.0 Classify risk factors for the development of cardiopulmonary and vascular diseases.

D. Essential entry-level skill sets (CC-5.28, 5.29, 5.30, 5.39)

- (11) 1.0 Identify evidence of ischemia on an electrocardiogram (5.30e; EXO 2)
- (12) 1.1 Differentiate between atrial and ventricular arrhythmia on an electrocardiogram and make clinical decisions based on analysis (5.30e; EXO 2, 3)

- (13) 1.2 Describe special considerations with assessment and intervention based on the intensive care environment (lines, tubes, ventilators) (5.30e, w; EXO 3)
- (14) 1.3 Identify cardiovascular and pulmonary drugs, adverse effects and physiological effect associated with exercise (5.28; EXO 3).
- (15) 3.0 Demonstrate entry-level skills associated with the physical examination of people with cardiovascular and/or pulmonary disease (5.30; EXO 2)
- (16) 3.1 Describe and demonstrate appropriate airway clearance techniques in the cardiopulmonary patient population (5.39f, EXO 4)
- (16a) 3.2 Demonstrate proper positioning for postural drainage (5.39f, EXO 4)
- (17) 3.3 Demonstrate the manual techniques of percussion, vibration, facilitated coughing, breathing exercises, mediate percussion, and auscultation (5.39f, EXO 4)

E. Examination & Evaluation (CC-5.9, 5.11, 5.12, 5.28, 5.29, 5.30, 5.31, 5.43; EXO 2 - all)

- (18) 1.0 Discuss self-monitoring and symptom awareness for recognition and management of cardiovascular and/or pulmonary issues (5.9)
- (19) 1.1 Identify risk factors for cardiovascular and pulmonary disease through self-assessment (5.12)
- (20) 1.2 Describe varying issues that may affect the physiological responses at rest and with exercise in clients with cardiovascular and/or pulmonary disease (5.19)
- (21) 1.3 Describe responses that assess degree of arousal, attention and cognition in patients with cardiovascular and/or pulmonary disease (5.30c)
- (22) 1.4 Describe special considerations in the assessment of muscular fitness in patients with cardiovascular and/or pulmonary disease (5.30m)
- (23) 1.5 Describe use of pain scales to assess pain associated with peripheral vascular disease, and cardiovascular and/or pulmonary mediated complaints (5.30p)
- (24) 1.6 Describe abnormal pulmonary responses to exercise in patients with cardiovascular and/or pulmonary disease (5.30w)
- (25) 2.0 Demonstrate ability to document cardiopulmonary specific findings (assessment and exercise response)
- (26) 2.1 Demonstrate appropriate patient/client interactions in interview, symptom and vital signs assessment, airway clearance techniques in clients with cardiovascular and/or pulmonary disease (5.11)
- (27) 2.2 Demonstrate ability to obtain an accurate history in patients with cardiovascular and/or pulmonary disease (5.28)
- (28) 2.3 Demonstrate ability to perform a suitable systems review in patients with cardiovascular and/or pulmonary disease (5.29)
- (29) 3.0 Demonstrate ability to assess submaximal and maximal aerobic endurance through standardized assessment techniques developed for patients with cardiovascular and/or pulmonary disease (5.30a)
- (30) 3.1 Describe and demonstrate ability to accurately assess pulses, venous integrity and differentiation of lymphatic flow (5.30e)
- (31) 3.4 Describe and demonstrate techniques used to assess integumentary integrity in patients with cardiovascular and/or pulmonary disease (5.30j)
- (32) 4.0 Classify risk stratification in known disease populations and methods used to reduce exercise risk (5.43)
- (33) 5.0 Demonstrate appropriate professional behavior including nonverbal behaviors.

F. Therapeutic interventions (CC-5.20, 5.25, 5.27, 5.30, 5.32 through 5.39)

- (34) 1.0 Describe the appropriate use of interventions as described in the Guide to Physical Therapist Practice (communication, instruction and interventions) in the management of people with cardiovascular and/or pulmonary disease;
- (35) 1.1 Describe and discuss special considerations for specific medical diagnoses in patients with cardiovascular and pulmonary disease, through analyses of current scientific literature (5.20; EXO 3)
- (36) 1.2 Describe clinical indicator thresholds and other health risk factors that necessitate referral to another health care professional or further examination or consultation by a physical therapist (5.27; EXO 10)
- (37) 1.3 Considering the stresses that may accompany cardiopulmonary disease and its management, describe the potential age related differential responses a physical therapist might observe (5.30; EXO 10)
- (38) 1.4 Describe modifications that maybe necessary in vocational and avocational activities in the presence of cardiovascular and/or pulmonary disease (5.38, EXO 4)
- (39) 1.5 Discuss the importance of family involvement in comprehensive care of patients with cardiovascular and/or pulmonary disease (5.34; EXO 8)
- (40) 1.6 Considering the stresses that may accompany cardiopulmonary disease and its management, describe the potential culturally related issues that a physical therapist might engage in developing a plan of care (5.34, 5.41; EXO 4)
- (41) 1.7 Identify the barriers, concerns, and the remedies associated with unique home environment situations (5.30g; EXO 3, 9);
- (42) 2.0 Demonstrate ability to evaluate data from the examination (history, systems review, and tests and measures) to make clinical judgments in patients with cardiovascular and/or pulmonary disease (5.31; EXO 2)
- (43) 3.0 Demonstrate through role playing appropriate behavior, language, and knowledge when describing the treatment options for cardiopulmonary care (5.41; EXO 8).
- (44) 3.1 Describe and demonstrate how posture may influence breathing efficiency and lower risk of pulmonary complications (5.39f; EXO 4)
- (45) 4.0 Compose 'best practice' strategies for clients with specific medical diagnoses across cardiovascular and pulmonary disease patterns (5.25; EXO 4)
- (46) 4.1 Articulate elements of a physical therapy plan of care that is safe, effective, and patient-centered for patients with cardiovascular and/or pulmonary disease (5.35; EXO 2, 4)
- (47) 4.2 Speculate how available resources may influence patient goals and outcomes to maximize treatment effectiveness and risk reduction (5.36; EXO 3, 4, 12)
- (48) 4.3 Assess methods to monitor the plan of care and adapt in response to patient status (5.38; EXO 4, 6)
- (49) 4.4 Summarize exercise interventions that can be tailored to achieve optimal client goals and outcomes in patients with cardiovascular and/or pulmonary disease (5.39a; EXO 3)
- (50) 4.5 Explain the proper safety considerations cardiopulmonary care including the procedures to following in the case of an emergency (5.43; EXO 4)

Note to students on expectations prior to discussion of assessment and intervention:  
From PT 530, review fundamental principles of exercise testing and prescription –  
These principles will be applied for clients with various manifestations of  
cardiopulmonary disease.

Class Schedule: *(please note that there may be some alterations due to guest lecturer availability).*

Aug. 26	* A & P related to the Pulmonary System and Disease * A & P related to the Pulmonary System and Disease
Aug. 28	* Physiological monitoring/ICU/CCU * Pulmonary Examination
Sept. 2	* Pulmonary Assessment * Pulmonary Assessment & Lab
Sept. 4	* Pulmonary Assessment & Lab * Pulmonary Tests/Procedures
Sept. 9	* Pulmonary Tests/Procedures * Pulmonary Conditions * <b>1:10-3:00MC visit (Oxygenation lec &amp; Vent demo) - Professor Nick Arthur</b>
Sept. 11	* Pulmonary Conditions * Pulmonary Rx lec/lab
Sept. 16	* Pulmonary Rx lec/lab * The Motivational Interview – <b>Professor Levison</b>
Sept. 18	* A & P related to the cardiovascular system and disease * Chest assessment/CV auscultation I
Sept. 23	* <b>Pulmonary section exam</b> * Chest assessment/CV auscultation II
Sept. 25	* Electrocardiography (ECG) I <b>Dr. Ryan Mays</b> * ECG II Ryan Mays
Sept. 30	* <b>Cardiovascular pharmacology Professor Vince Colucci</b> * ECG & Abnormal responses to assessment
Oct. 2	* Cardiopulmonary patient assessment & treatment: Clinical Exercise Testing * Cardiovascular assessment & therapeutic principles: CVD & HF
Oct. 7	* <b>Cardiopulmonary pharmacology Professor Vince Colucci</b> * Cardiovascular assessment & therapeutic principles: CVD & HF
Oct. 9	* Cardiovascular assessment & therapeutic principles * Peripheral arterial disease <b>Dr. Ryan Mays</b>
Oct. 14	* <b>Cardiovascular section exam</b>